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## SECTION 3.4

### Actuarial Basis

#### A. Basis of Valuation

An actuarial valuation is a mathematical device for measuring the liabilities under a pension plan and for determining a schedule of contributions to finance the plan. The actual cost of a pension plan cannot be determined until its entire experience is complete; however, actuarial techniques determine a pattern of contributions which will finance the liabilities in an orderly fashion. Assumptions are made regarding future experience in regard to the rate of investment return on invested funds, the probability of death, disability and other termination from employment, the rate of future salary increases, etc. The set of actuarial assumptions and the valuation method become the basis for making a valuation of the pension plan. The degree of conservatism to be reflected in the actuarial assumptions is a matter of judgment of the Retirement Board, who is charged with the responsibility of selecting assumptions.

An actuarial valuation does not determine ultimate pension plan costs; only the actual experience in regard to the many variables involved will establish the true cost of the plan. An actuarial valuation, however, reveals the year to year incidence of contributions necessary to soundly fund pension benefits. The incidence of contributions, or "funding schedule," may be increasing, level or decreasing from year to year as a percent of payroll, depending on the actuarial funding method utilized. Annual actuarial valuations are made to adjust contributions gradually as actual experience emerges. Changes in the assumptions may be required if the experience consistently departs from the valuation assumptions.

#### B. Description of Valuation Method

Liabilities and contributions shown in this report are computed using the Projected Unit Credit funding method prorated over total service. The current accrued benefit is a minimum accrued liability.

The objective under this method is to fund each participant's benefits under the Plan as they would accrue, taking into consideration future salary increases. Thus, the total pension, to which each participant is expected to become entitled, is broken down into units, each associated with a year of past or future credited service. When this method is introduced, there will be an initial liability for benefits credited for service prior to that date, and to the extent that the liability is not covered by assets of the Plan, there is an unfunded liability to be funded over a chosen period in accordance with an amortization schedule.

The valuation method for the County is based on a funded status target of 100%. If the funded status is more than or less than 100%, the surplus or deficit is amortized over a twenty-year period beginning July 1, 2003. The change in surplus or deficit of the funded status from a plan change will be amortized over a 20-year period beginning with the valuation date coincident with or following the plan change.

A description of the calculation follows:

An individual's **accrued benefit** for valuation purposes related to a particular separation date is the accrued benefit described under the Plan projected to the expected separation date, multiplied by the ratio of credited service as of the valuation date over credited service as of the expected separation date.

The **benefit** deemed to accrue for an individual during a plan year is the excess of the accrued benefit for valuation purposes at the end of the plan year over the accrued benefit for valuation purposes at the beginning of the plan year. Both accrued benefits are calculated from the same projections to the various anticipated separation dates.

An individual's **accrued liability** is the present value of the accrued benefit for valuation purposes at the beginning of the plan year, and the **normal cost** is the present value of the benefit deemed to accrue in the plan year. If multidecrements are used, the accrued liability and the normal cost for an individual are the sum of the component accrued liabilities and normal costs associated with the various anticipated separation dates. Such accrued liabilities and normal costs reflect the accrued benefits as modified to obtain the benefits payable on those dates and the probability of the individual separating on those dates.

The Plan's **normal cost** is the sum of the individual normal costs, and the Plan's **accrued liability** is the sum of the accrued liabilities for all participants under the Plan.

**Change in Method Since Last Valuation**

None

### C. Actuarial Assumptions for Valuation of Liabilities of Plan B

#### 1. Assumptions Concerning Future Events

Age:	<u>Sample Rates</u>			
	(Rates are per 1,000 lives)			
	<u>20</u>	<u>35</u>	<u>50</u>	<u>60</u>

#### Mortality Rate

Before and after retirement: RP-2000 Mortality Table Projected to 2006	<b>Male:</b>	0.307	0.750	1.917	6.125
	<b>Female:</b>	0.173	0.444	1.512	4.905

#### Disability Rate

Table of Values consistent with the scale at right	<b>Male:</b>	0.290	0.690	3.580	12.560
	<b>Female:</b>	0.300	1.360	5.330	11.590

#### Withdrawal Rate

Table of Values consistent with the scale at right	<b>Male:</b>	179.500	58.800	100.00	200.00
	<b>Female:</b>	579.600	163.200	100.00	200.00

#### Rate of Death Among Disabled Lives

Table of Values consistent with the scale at right	<b>Male:</b>	20.540	21.350	15.370	69.220
	<b>Female:</b>	17.090	21.690	33.630	41.220

#### Salary Scale

<u>Age</u>	<u>Assumption</u>
20 - 24	8.5%
25 - 29	8.0
30 - 34	7.5
35 - 39	7.0
40 - 44	6.0
45 - 49	5.5
50 - 54	5.0
55 - 59	4.5
60 - 64	4.0
65 +	3.0

#### Rate of Retirement

Assume early retirements occur according to withdrawal rate table; others at ultimate retirement age.

**Interest Rate**

8.25% per annum

**Funding**

Commences at date of eligibility

**Expenses**

Funding is for net costs only

**Ultimate Retirement Age**

Age 65 for General Employees, Age 60 for Deputy Sheriffs

**New Entrants**

None funded for

**Probability of Rehire for Terminated or Laidoff**

Not funded for

**Type of Death and Disability**

Seventy-five percent of deaths and disabilities are assumed to be line-of-duty for employees classified as deputy sheriffs. Ten percent of deaths and disabilities are assumed to be line-of-duty for all employees not classified as deputy sheriffs.

**Incidence of Involuntary Retirement**

Five percent of retirements are assumed to be involuntary.



**2. Assumptions Made with Respect to Employee Data**

**Spouse Frequency and Ages**

Actual married status, actual age of spouse for inactive group when provided. For active group, 65% married and three years average age difference between employee and spouse.

**Salary Used in Valuation**

Pay during fiscal year provided by the County.

**3. Changes in Assumptions Since Last Valuation**

None

## D. Actuarial Assumptions for Valuation of Liabilities of Plan A

### 1. Assumptions Concerning Future Events

	<u>Sample Rates</u>			
	<u>(Rates are per 1,000 lives)</u>			
Age:	<u>20</u>	<u>35</u>	<u>50</u>	<u>60</u>

#### Mortality Rate

Before and after retirement: RP-2000 Mortality Table Projected to 2006	<b>Male:</b>	0.307	0.750	1.917	6.125
	<b>Female:</b>	0.173	0.444	1.512	4.905

#### Disability Rate

Table of Values consistent with the scale at right	<b>Male:</b>	.290	.690	3.580	12.560
	<b>Female:</b>	.300	1.360	5.330	11.590

#### Withdrawal Rate

Table of Values consistent with the scale at right	<b>All:</b>	120.0	70.0	50.0	70.0
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#### Rate of Death Among Disabled Lives

Table of Values consistent with the scale at right	<b>Male:</b>	20.540	21.350	45.370	69.220
	<b>Female:</b>	17.090	21.690	33.630	41.220

#### Salary Scale

<u>Age</u>	<u>Assumption</u>
20 - 24	8.5%
25 - 29	8.0
30 - 34	7.5
35 - 39	7.0
40 - 44	6.0
45 - 49	5.5
50 - 54	5.0
55 - 59	4.5
60 - 64	4.0
65 +	3.0

#### Rate of Retirement

<u>Age</u>	<u>Rate of Retirement</u>
55 - 60	5%
61 - 62	8
63 - 65	12
66	25
67	100

#### **Interest Rate**

8.25% per annum

#### **Funding**

Commences at date of eligibility for plan participation

#### **Cost-of-Living Adjustment**

2.50% per annum, compounded

#### **Expenses**

Funding is for net costs only

#### **New Entrants**

None funded for

#### **Probability of Rehire for Terminated or Laidoff**

Not funded for

#### **Type of Death and Disability**

Ninety percent of deaths and disabilities are assumed to be non-hazardous duty.

#### **Form of Payment**

All vested participants are assumed to elect the normal form of payment as a life annuity.

## **2. Assumptions Made with Respect to Employee Data**

### **Spouse Frequency and Ages, Percent with Children**

Actual married status, actual age of spouse for inactive participants. For active group, 65% married, three years average age difference between employee and spouse. For active group, 60% of participants have children.

### **Salary Used in Valuation**

Pay during fiscal year provided by the County. For employees hired within one year of the valuation date, annualized pay based on actual pay provided by the County.

### **3. Changes in Assumptions Since Last Valuation**

None



**E. Actuarial Assumptions for Valuation of Liabilities of Plan C**

**1. Assumptions Concerning Future Events**

	<u>Sample Rates</u>			
	<u>(Rates are per 1,000 lives)</u>			
Age:	<u>20</u>	<u>35</u>	<u>50</u>	<u>60</u>

**Mortality Rate**

Before and after retirement:  
RP-2000 Mortality Table  
Projected to 2006

<b>Male:</b>	0.307	0.750	1.917	6.125
<b>Female:</b>	0.173	0.444	1.512	4.905

**Disability Rate**

Table of Values consistent  
with the scale at right

<b>Male:</b>	.290	.690	3.580	12.560
<b>Female:</b>	.300	1.360	5.330	11.590

**Withdrawal Rate**

Table of Values consistent  
with the scale at right

<b>All:</b>	120.0	70.0	50.0	70.0
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**Rate of Death  
Among Disabled Lives**

Table of Values consistent  
with the scale at right

<b>Male:</b>	20.540	21.350	45.370	69.220
<b>Female:</b>	17.090	21.690	33.630	41.220

**Salary Scale**

<u>Age</u>	<u>Assumption</u>
20 - 24	8.5%
25 - 29	8.0
30 - 34	7.5
35 - 39	7.0
40 - 44	6.0
45 - 49	5.5
50 - 54	5.0
55 - 59	4.5
60 - 64	4.0
65 +	3.0

## Rate of Retirement

### Rate of Retirement for Employees with fewer than 25 Years of Service

<u>Age</u>	<u>Rate</u>
55 - 60	5%
61 - 62	8
63 - 65	12
66	25
67	100

### Rate of Retirement for Employees with at least 25 Years of Service

<u>Age</u>	<u>Public Safety Employees</u>	<u>Non-Public Safety Employees</u>
less than 55	20%	10%
55 - 59	40	10
60 - 63	100	20
64 - 66	100	25
67	100	100

**Note:** In addition to the above assumptions we have assumed that the retirement rate for employees with at least 25 years of service, increases by 50% in the year following the Transition Period.

## Interest Rate

8.25% per annum

## Funding

Commences at date of eligibility for plan participation

## Cost-of-Living Adjustment

2.50% per annum, compounded

## Expenses

Funding is for net costs only

## New Entrants

None funded for

**Probability of Rehire for Terminated or Laid-off**

Not funded

**Type of Death and Disability**

Ninety percent of deaths and disabilities are assumed to be non-hazardous duty.

**Form of Payment**

All vested participants are assumed to elect the normal form of payment as a life annuity.

**2. Assumptions Made with Respect to Employee Data**

**Spouse Frequency and Ages, Percent with Children**

Actual married status, actual age of spouse for inactive participants. For active group, 65% married, three years average age difference between employee and spouse. For active group, 60% of participants have children.

**Salary Used in Valuation**

Pay during prior fiscal year provided by the County. For employees hired within one year of the valuation date, annualized pay based on actual pay reported by the County.

**3. Changes in Assumptions Since Last Valuation**

None

**F. Actuarial Funding Method for Valuation of Assets**

Assets are carried for valuation purposes at an Actuarial Asset Value which uses a method that smooths the market value of assets over a ten-year period.

In each plan year, a gain or loss is determined by calculating the difference between the expected value of the assets for the year and the market value of assets at the valuation date. The expected value of assets for the year is the prior year's market value of assets brought forward with interest to the current valuation date, plus actual contributions minus benefit payments, all adjusted for interest to the current valuation date. If the expected value is less than market value, the difference is a gain. Conversely, if the expected value exceeds market value, the difference is a loss.

These gains or losses are recognized at a rate of 10% per year. The unrecognized portion of each year's gain or loss is subtracted from the current year value to obtain the actuarial value of assets.

**Change in Method Since Last Valuation**

None.

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**SECTION 4****SUPPORTIVE INFORMATION****SECTION 4.1****Payout Projections****RETIREMENT PLAN A, PLAN B, AND PLAN C**

<u>Year</u>	<u>Total Actives</u>	<u>Total Inactives</u>	<u>Total</u>
2008-09	\$ 6,078,058	\$ 43,766,664	\$ 49,844,722
2009-10	8,918,397	43,407,010	52,325,407
2010-11	13,605,241	43,025,332	56,630,573
2011-12	17,974,879	42,551,808	60,526,687
2012-13	22,920,002	42,029,473	64,949,475
2013-14	28,375,486	41,508,719	69,884,205
2014-15	34,431,572	40,943,337	75,374,909
2015-16	40,441,150	40,369,329	80,810,479
2016-17	47,376,421	39,757,041	87,133,462
2017-18	54,315,049	39,103,247	93,418,296
2018-19	61,168,715	38,421,481	99,590,196
2019-20	68,136,811	37,636,679	105,773,490
2020-21	75,258,632	36,803,502	112,062,134
2021-22	82,544,792	35,922,996	118,467,788



## SECTION 4.2

### Summary of Valuation Data

	Plan B	Plan A	Plan C	Total
<b>ACTIVE PARTICIPANTS</b>				
Number	69	3,004	3,443	6,516
Number Vested	69	1,840	1,864	3,773
Number Transferred to City	0	182	1	183
Total Annual Payroll FY08				
County Payroll	\$ 4,136,581	\$ 112,498,234	\$ 143,473,336	\$ 260,108,151
Avg. Salary	\$ 59,950	\$ 39,865	\$ 41,683	\$ 41,072
City Payroll	N/A	\$ 9,890,888	\$ 36,735	\$ 9,927,623
Avg. Salary	N/A	\$ 54,346	\$ 36,735	\$ 54,249
Avg. Age	62.5	48.4	43.5	46.0
Avg. Service	34.2	12.1	10.9	11.7
Avg. Remaining Service	5.3	10.5	10.5	10.4
Number of Public Safety Employees	12	576	1,346	1,934
PSE Payroll	\$ 712,623	\$ 24,117,014	\$ 59,537,236	\$ 84,366,873
Avg. Pay	59,385	41,870	44,233	43,623
Avg. Age	57.8	45.0	41.6	42.4
Avg. Service	34.0	11.1	11.8	11.5

## SECTION 4.2

### Summary of Valuation Data (*continued*)

	<u>Plan B</u>	<u>Plan A</u>	<u>Plan C</u>	<u>Total</u>
<b><u>INACTIVE PARTICIPANTS</u></b>				
<b>Participants Receiving Benefits</b>				
<b>RETIRED</b>				
Number	992	956	52	2,000
Total Monthly Benefits	\$ 1,760,137	\$ 1,016,623	\$ 104,670	\$ 2,881,430
Avg. Monthly Benefits	\$ 1,774	\$ 1,063	\$ 2,013	\$ 1,441
<b>DISABLED</b>				
Number	45	122	0	167
Total Monthly Benefits	\$ 45,471	\$ 206,494	\$ 0	\$ 251,965
Avg. Monthly Benefits	\$ 1,010	\$ 1,693	\$ 0	\$ 1,509
<b>BENEFICIARIES</b>				
Number	305	190	2	497
Total Monthly Benefits	\$ 362,485	\$ 160,031	\$ 2,810	\$ 525,326
Avg. Monthly Benefits	\$ 1,188	\$ 842	\$ 1,405	\$ 1,057
<b>TOTAL</b>				
Number	1,342	1,268	54	2,664
Total Monthly Benefits	\$ 2,168,093	\$ 1,383,149	\$ 107,479	\$ 3,658,721
Avg. Monthly Benefits	\$ 1,616	\$ 1,091	\$ 1,990	\$ 1,373
<b>Participants with Deferred Benefits</b>				
<b>VESTED TERMINATED</b>				
Number	6	243	6	255
Total Monthly Benefits	\$ 5,612	\$ 185,228	\$ 12,685	\$ 203,525
Avg. Monthly Benefits	\$ 935	\$ 762	\$ 2,114	\$ 798
<b>DISABLED</b>				
Number	0	116	16	132
Total Monthly Benefits	\$ 0	\$ 156,169	\$ 22,570	\$ 178,739
Avg. Monthly Benefits	\$ 0	\$ 1,346	\$ 1,411	\$ 1,354
<b>BENEFICIARIES</b>				
Number	0	4	1	5
Total Monthly Benefits	\$ 0	\$ 4,392	\$ 1,118	\$ 5,509
Avg. Monthly Benefits	\$ 0	\$ 1,098	\$ 1,118	\$ 1,102
<b>TOTAL</b>				
Number	6	363	23	392
Total Monthly Benefits	\$ 5,612	\$ 323,339	\$ 36,372	\$ 365,323
Avg. Monthly Benefits	\$ 935	\$ 891	\$ 1,581	\$ 932
<b>TOTAL ACTIVE AND INACTIVE PARTICIPANTS</b>				
Number	1,417	4,635	3,520	9,572

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**SECTION 4.3****Yearly Comparisons - Plan B, Plan A, and Plan C**

	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Number of active participants	6,657	6,453	6,516	6,472	6,516
Total County payroll for active participants	\$ 243,299,833	\$ 241,509,438	\$ 241,403,735	\$ 249,838,652	\$ 260,108,151
Average County salary	\$ 37,738	\$ 38,617	\$ 38,118	\$ 39,714	\$ 41,072
Number of retired and disabled participants and beneficiaries	2,433	2,520	2,575	2,602	2,664
Annual pensions being paid	\$ 36,654,024	\$ 38,558,916	\$ 40,271,040	\$ 41,847,168	\$ 43,904,652
Number of deferred vested participants	318	413	454	432	392
Annual pensions payable	\$ 3,404,856	\$ 4,128,228	\$ 4,655,052	\$ 4,824,612	\$ 4,383,876
Actuarial Accrued Liability	\$ 741,745,691	\$ 790,879,920	\$ 880,487,979	\$ 941,346,211	\$ 1,000,475,305
Assets of trust fund (market value)	\$ 798,594,200	\$ 835,341,291	\$ 898,444,049	\$1,045,216,961	\$ 972,502,164
(actuarial asset value)	\$ 841,335,004	\$ 885,049,492	\$ 933,730,481	\$ 992,145,401	\$ 1,040,514,476
County minimum suggested contribution rate	4.27%	4.60%	5.30%*	5.91%*	6.50%
County minimum suggested contribution	\$ 10,322,692	\$ 11,037,956	\$ 12,956,023	\$ 15,261,041	\$ 17,430,216

\* changed funding method and/or assumptions